

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2002-076064

(43)Date of publication of application : 15.03.2002

(51)Int.Cl.

H01L 21/60

(21)Application number : 2000-262664

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(22)Date of filing : 31.08.2000

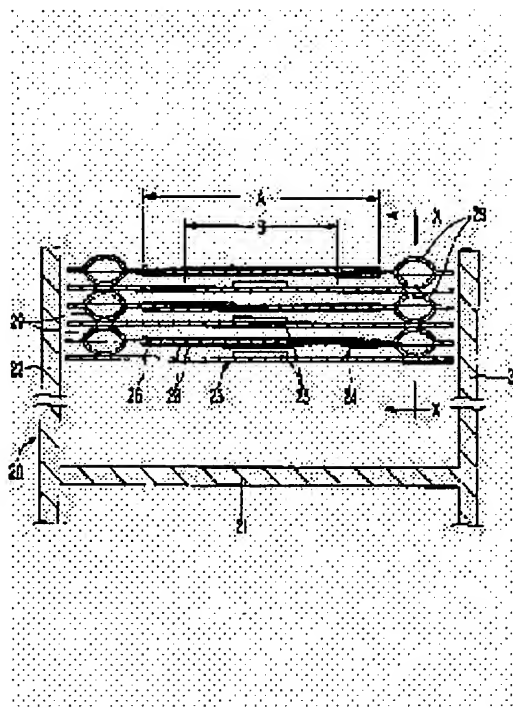
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(54) SPACER TAPE FOR TAB

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a TAB spacer tape that can prevent generation of electrostatic charge to the utmost, peeling of conductive films and generation of conductive foreign particles accompanied by the peeling.

SOLUTION: Conductive films are coated on both surfaces of main body of the spacer tape 26, and at the both ends of main body of the spacer tape 26 in the width direction, raised portions 29 to hold clearance are aligned with a certain interval in the longitudinal direction of main body of the spacer tape 26. An antistatic additive is mixed with a synthetic resin material in the sides of raised portions 29 at least, and conductive films are formed on both front and rear surfaces of main body of the spacer tape 26 between raised portions 29 of both sides.



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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] In case this invention rolls round the carrier tape for TAB for equipping with semiconductor chips, such as LSI, to a reel, it relates to the spacer tape for TAB intervened and used between the layer.

[0002]

[Description of the Prior Art] carrier tape 1 for TAB for equipping with semiconductor chips, such as LSI, the front face of the body 2 of a carrier tape which consists of the synthetic-resin film which has flexibility as shown in drawing 9 -- an inner lead 3, an outer lead 4, and test pad 5 etc. -- body 2 of a carrier tape Predetermined spacing is set to a longitudinal direction and it is prepared in it. And body 2 of a carrier tape Semiconductor chip 6 It equips and is an inner lead 3 about that the lead of each. It connects.

[0003] This kind of carrier tape 1 for TAB As shown in drawing 10, it is usually the spacer tape 7 for TAB of the product [between / layers] made of synthetic resin. It is a reel 8, intervening. It rolls round, and keeps or carries in that condition.

[0004] in such a case, spacer tape 7 to be used **** -- the discharge accompanying electrification of static electricity to semiconductor chip 6 In order to protect, the following is considered conventionally. namely, this spacer tape 7 Body 9 of a spacer tape which consists of a synthetic-resin film as shown in drawing 11 front flesh-side both sides -- antistatic -- while coating the conductive coat 10 of business -- this body 9 of a spacer tape crosswise both ends -- the height 11 for much spacing -- body 9 of a spacer tape It considers setting predetermined spacing to a longitudinal direction and forming in the shape of a train.

[0005]

[Problem(s) to be Solved by the Invention] Thus, body 9 of a spacer tape Spacer tape 7 which coated front flesh-side both sides with the conductive coat 10 Activity ***** and carrier tape 1 It is a reel 8, intervening the spacer tape 7 between layers. Also when it rolls round, it is the spacer tape 7. Since the conductive coat 10 is in a side, it is the spacer tape 7. Static electricity is not charged in a side and it is a semiconductor chip 6. It can protect.

[0006] However, body 9 of a spacer tape which contains a height 11 on this spacer tape Since the whole is coated with the conductive coat 10, the conductive coat 10 by the side of the crowning of a height 11 exfoliates, and it becomes easy to generate a fine conductive foreign matter, and that conductive foreign matter is the carrier tape 1. It is especially a semiconductor chip 6 a side. There is **** adhering to a lead etc.

[0007] On the other hand, it is the body 9 of a spacer tape. Only a part for a crosswise center section is coated with the conductive coat 10, and it is the body 9 of a spacer tape. Although generating of the conductive foreign matter by exfoliation of the conductive coat 10 can be prevented if it is made the structure where the conductive coat 10 is not formed in a height 11 side, it is this body 9 of a spacer tape. The new problem that static electricity is charged in a height 11 side will arise.

[0008] This invention aims at offering the spacer tape for TAB which can prevent exfoliation of a conductive coat and generating of the conductive foreign matter accompanying it while it can prevent electrification of static electricity as much as possible in view of this conventional trouble.

[0009]

[Means for Solving the Problem] While this invention coats both sides of the body 26 of a spacer tape with the conductive coat 28 In the spacer tape for TAB made of synthetic resin which set predetermined spacing to the longitudinal direction of said body 26 of a spacer tape, and formed the height 29 for gap maintenance in the ends side of the cross direction of this body 26 of a spacer tape in the shape of a train An antistatic agent is scoured at least into the synthetic-resin ingredient by the side of said height 29, and said conductive coat 28 is formed in front flesh-side both sides of said body 26 of a spacer tape between the heights 29 of said both sides.

[0010]

[Embodiment of the Invention] Hereafter, the example of this invention is explained in full detail based on a drawing. Drawing 1 - drawing 8 illustrate 1 operation gestalt of this invention. In drawing 1 and drawing 2, 20 is a reel for rolling up and the flange 22 of a couple is formed in the ends of the tubed rolling-up drum 21.

[0011] 23 is a carrier tape for TAB, 24 is a spacer tape for TAB, and these are in the condition which intervened the spacer tape 24 between each class of the carrier tape 23, and are rolled round by the periphery of the rolling-up drum 21 of a reel 20. In addition, the carrier tape 23 is constituted by the synthetic-resin film which has flexibility, and the semiconductor chip 25 is mounted.

[0012] The spacer tape 24 is a product made of synthetic resin, as shown in drawing 3 - drawing 5, it has the band-like body 26 of a spacer tape, and the body 26 of a spacer tape is constituted by the synthetic-resin film which has the flexibility which covers the whole and scoured the antistatic agent to abbreviation homogeneity.

[0013] While the height formation field 27 is established in the both ends of that cross direction at the body 26 of a spacer tape, coating of the conductive coat 28 is carried out to the overall length of a longitudinal direction band-like covering front flesh-side both sides for a center section of a between [both this heights formation field 27 (i.e., the cross direction of the body 26 of a spacer tape)]. Coating field A of the cross direction of the conductive coat 28 Mounting field B of the semiconductor chip 25 by the side of the carrier tape 23 It is size.

[0014] Along with the longitudinal direction of the body 26 of a spacer tape, predetermined spacing is set in each height formation field 27, and the height 29 for much spacing is formed in it in the shape of a train. Each height 29 is formed in the longitudinal direction by turns at the reverse sense so that embossing shaping of the height formation field 27 of the body 26 of a spacer tape may be carried out, it may project in the shape of the spherical surface in the direction of a front flesh side from the body 26 of a spacer tape and it may project in the opposite hand of a front flesh side to the body 26 of a spacer tape. Between the lead side of the carrier tape 23, and the body 26 of a spacer tape, a height 29 is for holding predetermined spacing, and is formed at predetermined height and interval.

[0015] A predetermined binder is mixed with a conductive predetermined ingredient, the front face of the body 26 of a spacer tape is coated, for example, carbon is used for the conductive ingredient, polyester melamine resin is used for a binder, respectively, and coating of the conductive coat 28 is carried out by gravure and other coating methods. The conductive coat 28 is constituted mainly considering carbon as a main ingredient.

[0016] the surface-electrical-resistance value of the conductive coat 28 -- 103-107 [for example,] omega -- desirable -- 106 omega or 103-106 It is omega extent. In addition, the surface hardness of the conductive coat 28 is extent 3g (it is about 4H at a pencil degree of hardness) for example, of more than scratch hardness, and is the hardness of extent which does not spoil the flexibility of the body 26 of a spacer tape, and does not exfoliate at the time of crookedness.

[0017] The synthetic-resin film which constitutes the body 26 of a spacer tape mixes an antistatic agent in the synthetic-resin ingredient which has the insulation of polyethylene etc., scours it, and is extended in the shape of a film. The surfactant is used for the antistatic agent, and when the surfactant absorbs the

moisture in air, conductivity arises in the body of spacer tape 26 whole.

[0018] The surfactant is mixed to the synthetic-resin ingredient which constitutes the body 26 of a spacer tape at about 1 - 3% of the weight of a rate. And the surfactant containing a height 29 elaborates on the body 26 of a spacer tape, and 109-1012 ohms of surface-electrical-resistance values of the whole lump part have become 1011 ohms or about 109-1011ohms preferably.

[0019] In addition, as a synthetic-resin ingredient of the body 26 of a spacer tape, it is also possible besides polyethylene to use polyimide, polyether imide, polyether sulphone, polyphenylene sulfide, vinyl chloride, polystyrene, polypropylene, etc.

[0020] What is necessary is to face manufacturing the spacer tape 24 of such a configuration, and just to make it the surface-electrical-resistance value of the conductive coat 28, the melting point, coating thickness, etc. serve as a numeric value as shown in drawing 6 the thickness of the body 26 of a spacer tape, tensile strength, and whenever [breaking extension], for example. However, this is an example and is not limited to this numeric value.

[0021] For the spacer tape 24 manufactured according to this operation gestalt, exfoliation of the conductive coat 28 was checked by the approach shown in drawing 7 . That is, as shown in drawing 7 , the press equipment 33 equipped with the movable frame 32 which can move up and down freely along with two or more guide rods 31 fixed on a fixed frame 30 and this fixed frame 30 is used for this trial, and the test piece of the spacer tape 24 is fixed to it so that the cross direction may turn into the vertical direction between that fixed frame 30 and movable frame 32.

[0022] And lowering of the degree of adhesion of the coating part of the count of predetermined and make it move up and down 1000 times and according to crookedness of spacer tape 24 conductivity coat 28 was checked for the movable frame 32 by predetermined within the limits. In addition, it is the spacer tape 24 made from polyester [finishing / embossing shaping of a height 29], and two kinds of things (188 micrometers in thickness and 150 micrometers) were used for the test piece.

[0023] After the bend test of the spacer tape 24, the binder of a cellophane tape was stuck on the edge of the conductive coat 28, the friction test was performed, and when the existence of the conductive coat 28 adhering to the binder side was observed, in 1000 crookedness, exfoliation of the conductive coat 28 adhering to the binder side of a cellophane tape was not observed.

[0024] Moreover, it checked about the problem by friction of a height 29 by the approach shown in drawing 8 . The cross-section half moon-like standing ways 34 where a top face curves in the shape of radii as shown in drawing 8 are used for this trial, a polyimide film 35 is fixed to the top face of these standing ways 34, and they are the support reels 36 and 37 of a couple. The spacer tape [finishing / embossing] 24 is rolled almost in between. And where the height 29 of the spacer tape 24 is contacted to a polyimide film 35, they are both the support reels 36 and 37. After the spacer tape's 24 having begun to wind in between and repeating rolling up 100 times, the foreign matter which is omitted from the crowning of a height 29 was observed. In addition, the polyimide film 35 on standing ways 34 was exchanged for every test piece.

[0025] The spacer tape 24 (test piece 1) concerning this invention with a thickness of 188 micrometers which scoured the surface active agent on the body 26 of a spacer tape which contains a height 29 in a test piece, and coated a part for a center section with the conductive coat 28 made from polyester, The spacer tape (test piece 2) which coated the whole surface of the body 26 of a spacer tape containing a height 29 with the conductive coat 28, and the spacer tape made from vinyl chloride (test piece 3) which scoured electric conduction material in the body 26 of a spacer tape were used. Any test piece carries out embossing of the height 29.

[0026] The foreign matters which adhered on the polyimide film 35 were collected with the binder of a cellophane tape about each test piece after experimental implementation. The foreign matter which can be checked by viewing from the polyimide film 35 contacted to the test piece 1 was not imprinted by the cellophane tape. However, the black foreign matter considered that conductive material is included from the polyimide film 35 contacted to the test piece 2 and the test piece 3 was imprinted by the cellophane tape.

[0027] Therefore, also when using the spacer tape 24 of a configuration like instantiation for the

operation gestalt and the carrier tape 23 is rolled round to a reel 20, intervening the spacer tape 24 between layers, generating of a conductive foreign matter can be prevented and generating of static electricity of the spacer tape 24 can be prevented certainly.

[0028] That is, since the height 29 side in contact with the carrier tape 23 scours an antistatic agent on the body 26 of a spacer tape when the spacer tape 24 is intervened between the layers of the carrier tape 23, it does not generate and the problem called exfoliation of a conductive foreign matter like before can also prevent certainly electrification by the side of a height 29.

[0029] Moreover, since the conductive coat 28 is formed in a part for the center section of the cross direction of the body 26 of a spacer tape, the semiconductor chip 25 by the side of the carrier tape 23, a lead, etc. and electrification of the part which counters can be prevented by this conductive coat 28. And since both sides do height 29 and the conductive coat 28 does not contact the carrier tape 23 and semiconductor chip 25 grade, it does not have **** in which this conductive coat 28 exfoliates, either.

[0030] Since the surfactant is used especially as an antistatic agent, the spacer tape 24 which equipped the height 29 side with the antistatic function can be manufactured easily and cheaply. Moreover, since front flesh-side both sides between the heights 29 of the ends of the body 26 of a spacer tape are coated with the conductive coat 28 while scouring a surfactant on the whole synthetic-resin film which constitutes the body 26 of a spacer tape rather than mixing a surfactant only in a height 29 side, carrying out embossing of the synthetic-resin film and forming a height 29, manufacture of spacer tape 24 the very thing is also easy.

[0031] As mentioned above, although the operation gestalt of this invention was explained in full detail, modification various in the range which is not limited to this operation gestalt and does not deviate from the meaning is possible for this invention. That is, with an operation gestalt, although the surfactant is used as an antistatic agent, conductive ingredients other than a surfactant may be scoured in the body 26 of a spacer tape.

[0032] Moreover, it forms the installation sections, such as opening, in the height formation field 27 of the both ends of the cross direction of the body 26 of a spacer tape, a height 29 is formed in the body 26 of a spacer tape by embossing at one, and also it may carry out mould shaping of the height 29 so that it may fix to the body 26 side of a spacer tape in the installation section, and you may make it fix the height 29 of another structure on the body 26 of a spacer tape. Moreover, another member may constitute the body 26 of a spacer tape, and the height formation field 27, and both may be connected by joining etc.

[0033] In addition, what is necessary is just to constitute the height formation field 27 which contains a height 29 or a height 29 with the synthetic-resin ingredient which scoured antistatic agents, such as a surfactant, in these cases. Therefore, if what scoured antistatic agents, such as a surfactant, like the operation gestalt may be used and the conductive coat 28 is formed in the whole abbreviation for the front flesh-side both sides, what scours antistatic agents, such as a surfactant, may be used for the body 26 of a spacer tape.

[0034]

[Effect of the Invention] While coating front flesh-side both sides of the body 26 of a spacer tape with the conductive coat 28 according to this invention In the spacer tape for TAB made of synthetic resin which set predetermined spacing to the longitudinal direction of the body 26 of a spacer tape, and formed the height 29 for much gap maintenance in the ends side of the cross direction of this body 26 of a spacer tape in the shape of a train Since the antistatic agent was scoured into the synthetic-resin ingredient of a height 29 at least and the conductive coat 28 is formed in front flesh-side both sides of the body 26 of a spacer tape between the heights 29 of both sides While being able to prevent electrification of static electricity as much as possible, there is an advantage which can prevent exfoliation of the conductive coat 28, generating of the conductive foreign matter accompanying it, etc.

[0035] Moreover, the synthetic-resin film which scoured the antistatic agent into the synthetic-resin ingredient constitutes the body 26 of a spacer tape containing a height 29, and since embossing formation of the height 29 which projects to this body 26 of a spacer tape in the opposite hand of a front flesh side to the both ends of the cross direction of this body 26 of a spacer tape is carried out by turns at

the longitudinal direction of the body 26 of a spacer tape, spacer tape 24 the very thing can be manufactured easily and cheaply.

[0036] And coating field A of the cross direction of the conductive coat 28 Mounting field B of the semiconductor chip 25 by the side of the carrier tape 23 Since it is size, electrification of the part corresponding to the semiconductor chip 25 by the side of the carrier tape 23 can be prevented certainly.

[0037] Moreover, since the surfactant is used as an antistatic agent, while embossing of the body 26 of a spacer tape etc. is easy and being able to manufacture the spacer tape 24 easily as compared with the case where conductive matter, such as a metal powder, is used, also when exfoliation etc. arises, problems, such as breakage on a semiconductor chip 25, can be prevented.

[0038] Since the conductive coat 28 is formed by using carbon as main ingredients, as compared with the case where conductive matter, such as a metal powder, is used, embossing of the body 26 of a spacer tape etc. is easy, and the spacer tape 24 can be manufactured easily.

[0039] And since the surface-electrical-resistance value of the conductive coat 28 is smallness, it can protect certainly the semiconductor chip 25 by the side of the carrier tape 23 from the surface-electrical-resistance value of a height 29.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the sectional view of the rolling-up condition which shows 1 operation gestalt of this invention.

[Drawing 2] It is X-X-ray sectional view of drawing 1.

[Drawing 3] It is the top view of the spacer tape in which 1 operation gestalt of this invention is shown.

[Drawing 4] It is the perspective view of the spacer tape in which 1 operation gestalt of this invention is shown.

[Drawing 5] It is the sectional view of the important section of the spacer tape in which 1 operation gestalt of this invention is shown.

[Drawing 6] It is the physical-properties table of the spacer tape in which 1 operation gestalt of this invention is shown.

[Drawing 7] It is the explanatory view of the test method of the spacer tape in which 1 operation gestalt of this invention is shown.

[Drawing 8] It is the explanatory view of the test method of the spacer tape in which 1 operation gestalt of this invention is shown.

[Drawing 9] It is the top view of the carrier tape for TAB.

[Drawing 10] It is the cross section of a rolling-up condition.

[Drawing 11] It is the sectional view of the conventional spacer tape.

[Description of Notations]

23 Carrier Tape for TAB

25 Semiconductor Chip

26 Body of Spacer Tape

28 Conductive Coat

29 Height

A Coating field

B Mounting field

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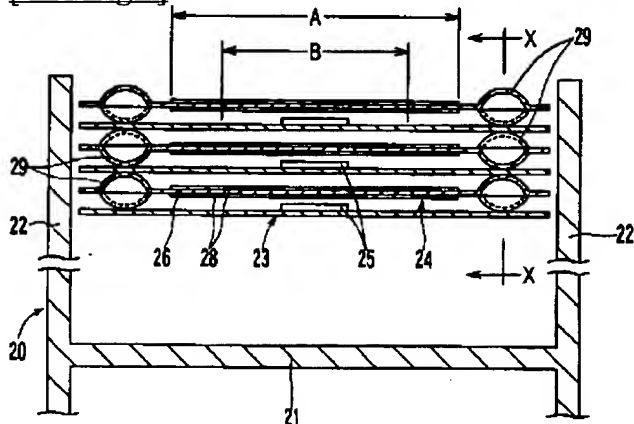
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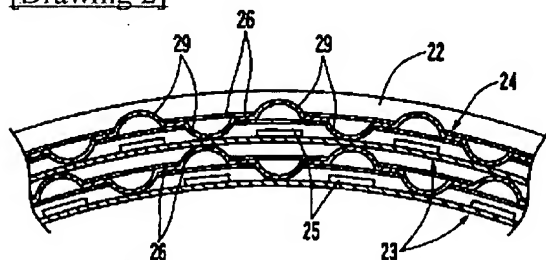
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DRAWINGS

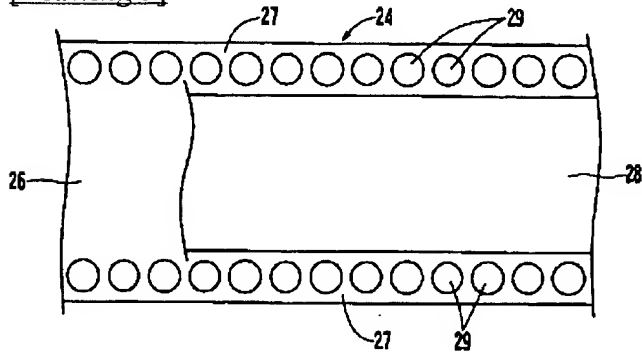
[Drawing 1]



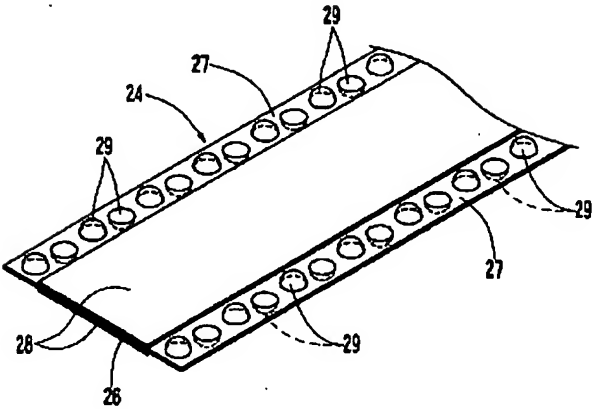
[Drawing 2]



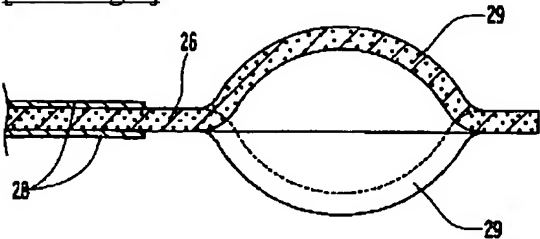
[Drawing 3]



[Drawing 4]



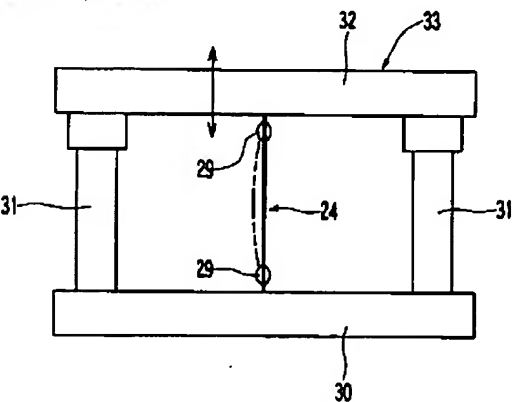
[Drawing 5]



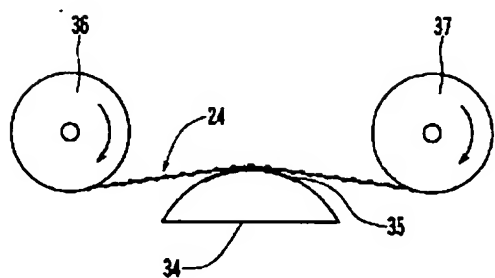
[Drawing 6]

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		TD	209.72
破 断 伸 度	%	MD	183
		TD	158
表 面 抵 抗 値	□/□		$1.0 \times 10^4 \sim 10^5$
融 点	°C		265
コーティング厚	μm	片面	2~3

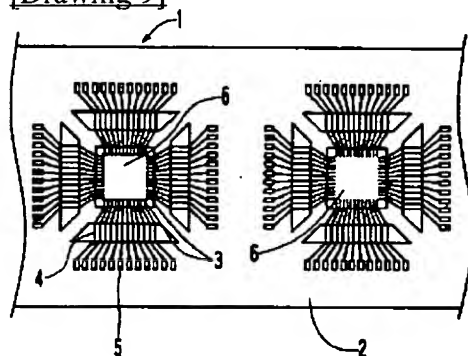
[Drawing 7]



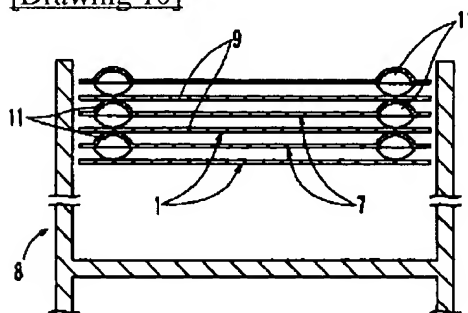
[Drawing 8]



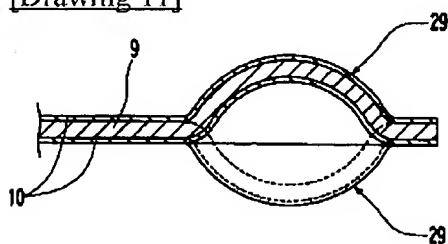
[Drawing 9]



[Drawing 10]



[Drawing 11]



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CLAIMS

[Claim(s)]

[Claim 1] While coating both sides of the body of a spacer tape (26) with a conductive coat (28) In the spacer tape for TAB made of synthetic resin which set predetermined spacing to the longitudinal direction of said body of a spacer tape (26), and prepared the height for gap maintenance (29) in the ends side of the cross direction of this body of a spacer tape (26) in the shape of a train The spacer tape for TAB characterized by having scoured the antistatic agent at least into the synthetic-resin ingredient by the side of said height (29), and preparing said conductive coat (28) in front flesh-side both sides of said body of a spacer tape (26) between the heights (29) of said both sides.

[Claim 2] It is a spacer tape for TAB given in ***** and ***** 1 about having carried out embossing formation of said height (29) which constitutes said body of a spacer tape (26) containing said height (29) with the synthetic-resin film which scoured the antistatic agent, and projects to this body of a spacer tape (26) in the opposite hand of a front flesh side to the both ends of the cross direction of this body of a spacer tape (26) by turns at the longitudinal direction of said body of a spacer tape (26).

[Claim 3] Coating field of the cross direction of said conductive coat (28) (A) Mounting field of the semiconductor chip (25) by the side of a carrier tape (23) (B) Spacer tape for TAB according to claim 1 or 2 characterized by being size.

[Claim 4] The spacer tape for TAB given in any of claims 1-3 characterized by using a surfactant as said antistatic agent and scouring this surfactant into a synthetic-resin ingredient they are.

[Claim 5] The spacer tape for TAB given in any of claims 1-4 characterized by forming said conductive coat (28) by using carbon as main ingredients they are.

[Claim 6] The spacer tape for TAB given in any of claims 1-5 they are on which the surface-electrical-resistance value of said conductive coat (28) is characterized by being smallness rather than the surface-electrical-resistance value of said height (29).

[Translation done.]